

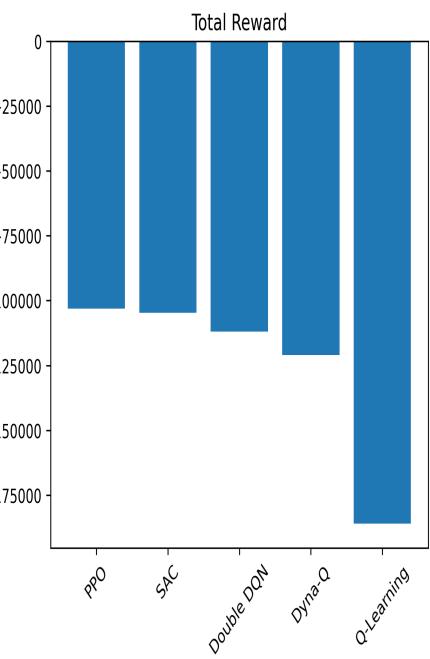
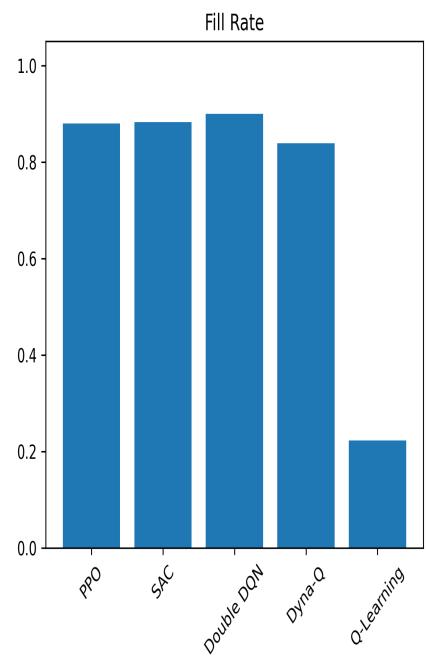
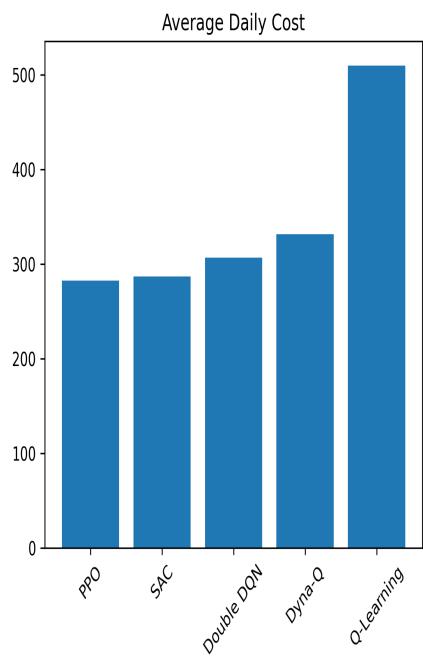
# Inventory Management RL Evaluation Report

Generated: 2025-11-25 13:31:14

## Summary Comparison

Algorithm	Avg Cost	Fill Rate	Stockout Rate	Avg Inventory	Total Reward
PPO	\$282.44	87.95%	19.10%	89.6	-103089.45
SAC	\$286.87	88.22%	22.58%	65.3	-104708.55
Double DQN	\$306.54	89.97%	15.70%	98.1	-111887.30
Dyna-Q	\$331.36	83.84%	22.19%	111.2	-120946.10
Q-Learning	\$509.69	22.25%	94.11%	1.4	-186035.20

# Performance Comparison Plots



# Detailed Evaluation Results

## Q-Learning Evaluation Report

### COSTS

Avg Daily Cost: \$509.69 (+/-9.87)  
Holding Cost: \$504.20  
Stockout Cost: \$161715.00  
Ordering Cost: \$23816.00

### SERVICE LEVEL

Fill Rate: 22.2%  
Stockout Rate: 94.1%

### INVENTORY

Avg Inventory: 1.4 units

### PERFORMANCE

Total Reward: -186035.20

## PPO Evaluation Report

### COSTS

Avg Daily Cost: \$282.44 (+/-6.12)  
Holding Cost: \$32715.25  
Stockout Cost: \$25183.56  
Ordering Cost: \$45190.64

### SERVICE LEVEL

Fill Rate: 88.0%  
Stockout Rate: 19.1%

### INVENTORY

Avg Inventory: 89.6 units

### PERFORMANCE

Total Reward: -103089.45

## SAC Evaluation Report

### COSTS

Avg Daily Cost: \$286.87 (+/-6.95)  
Holding Cost: \$23851.65  
Stockout Cost: \$24541.01  
Ordering Cost: \$56315.89

### SERVICE LEVEL

Fill Rate: 88.2%  
Stockout Rate: 22.6%

### INVENTORY

Avg Inventory: 65.3 units

### PERFORMANCE

Total Reward: -104708.55

## Dyna-Q Evaluation Report

### COSTS

Avg Daily Cost: \$331.36 (+/-14.21)  
Holding Cost: \$40597.10  
Stockout Cost: \$33717.00  
Ordering Cost: \$46632.00

### SERVICE LEVEL

Fill Rate: 83.8%  
Stockout Rate: 22.2%

### INVENTORY

Avg Inventory: 111.2 units

### PERFORMANCE

Total Reward: -120946.10  
DOUBLEDQN

## Double DQN Evaluation Report

### COSTS

Avg Daily Cost: \$306.54 (+/-5.17)  
Holding Cost: \$35812.30  
Stockout Cost: \$20981.00  
Ordering Cost: \$55094.00

### SERVICE LEVEL

Fill Rate: 90.0%  
Stockout Rate: 15.7%

### INVENTORY

Avg Inventory: 98.1 units

### PERFORMANCE

Total Reward: -111887.30

## Summary Comparison

Algorithm	Avg Cost	Fill Rate	Stockout Rate	Avg Inventory	Total Reward
PPO	\$282.44	87.95%	19.10%	89.6	-103089.45
SAC	\$286.87	88.22%	22.58%	65.3	-104708.55
Double DQN	\$306.54	89.97%	15.70%	98.1	-111887.30
Dyna-Q	\$331.36	83.84%	22.19%	111.2	-120946.10
Q-Learning	\$509.69	22.25%	94.11%	1.4	-186035.20